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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

CHANG, ERIC

ART UNIT	PAPER NUMBER
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2116

DATE MAILED: 02/11/2004

8

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/648,965

Applicant(s)

KELLER, LESLIE N.

Examiner

Eric Chang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 20-49 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 20-49 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- 1) ☐ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. Claims 20-49 are pending.

Response to Arguments

2. Applicant's arguments, see pages 2-4, filed January 20, 2004, with respect to the rejection(s) of claim(s) 20-49 under 35 USC 102(e) and 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of newly found prior art.

Claim Rejections - 35 USC § 103

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
4. Claims 20-21, 23-30, 33-34, 36-43 and 46-49 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,073,220 to Gunderson, in view of U.S. Patent 6,366,965 to Binford et al.
5. As to claim 20, Gunderson discloses a boot device for a computer comprising:
[a] two storage devices configured to store an operating system for booting the computer
[col. 13, lines 19-25 and 48-49];

[b] wherein the boot device is configured so the computer system can access the operating system from either storage device in the event of a failure of one of the storage devices [col. 10, lines 59-66].

Gunderson teaches a boot device for a computer system wherein two storage devices are available to for providing the operation system during the boot process. Gunderson teaches all of the limitations of the claim but does not teach that both devices appear as a single target device to the computer.

Binford teaches that multiple redundant components within a device appear as a single target device via a unique identifier to the computer [col. 4, lines 18-20]. Binford teaches that multiple redundant components, such as storage devices, may be used to provide data, such as an operating system, to a computer system [col. 1, lines 29-51]. Binford further teaches that the individual components within the device are treated as a single entity by the computer system [col. 2, lines 23-42], so that said individual components may be interchangeably swapped without affecting access to the device in general.

At the time that the invention was made, it would have been obvious to a person of ordinary skill in the art to employ the single device identifier method as taught by Binford. One of ordinary skill in the art would have been motivated to do so that access to the individual storage devices can be encapsulated without requiring direct BIOS calls to access to each one.

It would have been obvious to one of ordinary skill in the art to combine the teachings of the cited references because they are both directed to the problem of integrating redundant back-up storage devices with a computer system. Moreover, the single device identifier means taught by Binford would improve the flexibility of Gunderson because it allowed automatic and

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immediate access to the stored data in the event of failure of one of the storage devices without requiring manual intervention [col. 1, lines 29-40].

6. As to claims 21 and 34, Gunderson discloses the boot device is configured to receive read access from the computer system and respond with read data from either the first or second storage device [col. 1, lines 8-13]. Gunderson teaches that data may be accessed from either the first or second storage device, depending on the failure status of one of said storage devices.

7. As to claims 23-24, 30, 36-37, 43 and 47, Gunderson discloses the boot device receives write data from the computer system and stores data on both the first and second storage device [col. 3, lines 58-67, and col. 4, lines 1-11]. Gunderson teaches that the data written to the primary storage device is also written to the backup storage device by means well known in the art [col. 10, lines 17-58]. Furthermore, Gunderson teaches that the second storage device is configured to mirror the first storage device [col. 4, lines 20-24].

8. As to claims 25-26, 38-39 and 48, Gunderson discloses the boot device is configured to:

[a] detect a failure of one of the storage devices [col. 3, lines 11-18, and col. 5, lines 11-14];

[b] receive a replacement storage device for the failed storage device [col. 5, lines 24-26];
and

[c] mirror the non-failed one of the storage device to the replacement storage device [col. 10, lines 59-67, and col. 11, lines 1-7].

Gunderson teaches that the boot device can detect when one of the storage devices has failed, and facilitates the replacement of said drive. While the drive is being replaced, the computer system may continue to operate using the backup storage device, because the backup storage device contains all of the data from the primary drive mirrored, and can therefore be substituted in at any time [col. 4, lines 15-24]. When the failed drive has been replaced, Gunderson provides means by which data is mirrored from the non-failed drive to the replacement drive. In addition, because Gunderson teaches that the boot device detects and communicates failure information [col. 3, lines 11-18], it would be obvious that such communications would occur over any means well known in the art, such as a serial interface, substantially as claimed.

9. As to claims 27-29 and 40-42, Gunderson discloses a first and second port connecting said first and second storage devices, respectively, to the computer system, as a single target device [FIG. 1, and col. 13, lines 19-27]. Because they appear as a single device, it would be obvious to one of ordinary skill in the art that the computer system would treat them as having the same WWN with which to access the boot device. Furthermore, Gunderson teaches that if one of the ports fails, the storage devices may still be accessed through the other port [col. 3, lines 15-18].

10. As to claim 33, Gunderson and Binford disclose a boot device comprising a first and second storage device containing an operating system and appearing as a single device, wherein a computer system can access either said first or second storage device in the event of a failure of

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one of them. Furthermore, Binford teaches that one of the storage devices can automatically provide access to the data, including the operating system, in the event of failure of the other storage device without requiring manual intervention [col. 1, lines 29-51]. Because Gunderson and Binford teach the boot device, Gunderson and Binford also teach the computer system comprising said boot device, substantially as claimed.

11. As to claim 46, Gunderson and Binford disclose a boot device comprising a first and second storage device containing an operating system and appearing as a single device, wherein a computer system can access either said first or second storage device in the event of a failure of one of them. Furthermore, Binford teaches that one of the storage devices can automatically and immediately provide access to the data in the event of failure of the other storage device without requiring manual intervention [col. 1, lines 29-40]. Because Gunderson and Binford teach the boot device, Gunderson and Binford also teach the implemented by said boot device, substantially as claimed.

12. As to claim 49, Gunderson discloses the method further comprises removing one of the storage devices from operation [col. 5, lines 11-26], and restoring operating systems from a first storage device to a second storage device [col. 10, lines 59-66]. If the contents of the second storage device differ from the first storage device, through the restoration process, the contents of the second storage device may be mirrored from the first storage device, using the means taught by Gunderson. In this way, Gunderson provides for restoring operating systems from the first

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storage device if the upgrade process for the second storage device does not successfully complete, substantially as claimed.

13. Claims 22 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,073,220 to Gunderson, in view of U.S. Patent 5,210,860 to Pfeffer et al., in further view of U.S. Patent 6,366,965 to Binford et al.

14. As to claims 22 and 35, Gunderson and Binford teach all of the limitations of the claim, but do not teach that the boot device is configured to send a read access to both the first and second storage device and return data from whichever responds first.

Pfeffer teaches that mirrored drives using duplexed disk controllers are configured to send a read access to both the first and second storage device and return data from whichever responds first [col. 5, lines 60-68, and col. 6, line 1].

At the time that the invention was made, it would have been obvious to a person of ordinary skill in the art to employ the disk read means as taught by Pfeffer. One of ordinary skill in the art would have been motivated to do so that data would be continuously available to the computer system.

It would have been obvious to one of ordinary skill in the art to combine the teachings of the cited references because they are both directed to the problem of implementing a mirrored disk drives. Moreover, the disk read means taught by Pfeffer would improve the responsiveness of Gunderson and Binford because it allowed for faster retrieval of data from the boot device.

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15. Claims 31-32 and 44-45 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,073,220 to Gunderson, in view of U.S. Patent 6,140,926 to Hayden et al., in further view of U.S. Patent 6,366,965 to Binford et al.

16. As to claims 31 and 44, Gunderson and Binford teach all of the limitations of the claim but do not teach that a redundant power supply is configured to provide power if another power supply for the boot device fails.

Hayden teaches that separate power sources may be used to power disk drives [col. 1, lines 20-35].

At the time that the invention was made, it would have been obvious to a person of ordinary skill in the art to employ redundant power supply means as taught by Hayden. One of ordinary skill in the art would have been motivated to do so that power can be supplied to the boot device in the case of power supply failure.

It would have been obvious to one of ordinary skill in the art to combine the teachings of the cited references because they are both directed to the problem of providing a fail-safe hard drive. Moreover, the redundant power supply means taught by Hayden would improve the availability of Gunderson and Binford because it allowed the computer system to continue operating through a power failure condition.

Furthermore, use of other redundant power supplies, such as batteries, uninterruptible power supplies and capacitors are also well known in the art for providing backup power to computer systems in the case of power failure.

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17. As to claims 32 and 45, Gunderson and Binford teach all of the limitations of the claim but do not teach that the boot device further comprises an LED configured to indicate if one of the storage devices fails.

Hayden teaches that LEDs are used to indicate if one of a plurality of storage devices fails [col. 3, lines 44-54].

At the time that the invention was made, it would have been obvious to a person of ordinary skill in the art to employ the LED indicator means as taught by Hayden. One of ordinary skill in the art would have been motivated to do so that the occurrence of failure of a storage device within the boot device can be visually conveyed to the user of the computer system.

It would have been obvious to one of ordinary skill in the art to combine the teachings of the cited references because they are both directed to the problem of providing a fail-safe hard drive. Moreover, the LED indicator means taught by Hayden would improve the operation of Gunderson and Binford because it allowed the user to be visually notified of the failure of a storage device even if its corresponding power supply has also failed.

Conclusion

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eric Chang whose telephone number is (703) 305-4612. The examiner can normally be reached on M-F 9:00-5:30.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Lee can be reached on (703) 305-9717. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

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